



UNIVERSITY OF JAMMU

NOTIFICATION (18/May/Adp/12)

It is hereby notified for the information of all concerned that the Vice-Chancellor, in anticipation of the approval of the Academic Council, is pleased to authorize the adoption of the Syllabi and Courses of Study in the subject of **B.A./B.Sc.(Computer Application)** for V and VI semester under the **Choice Based Credit System** at the Undergraduate level (as given in the **Annexure**) for the Examinations to be held in the years indicated against each semester as under:-

Subject	Semester	For the examinations to be held in the year
Computer Application(B.A/B.Sc)	Semester-V	Dec. 2018,2019 and 2020
	Semester-VI	May 2019, 2020 and 2021

The Syllabi of the courses is available on the University website: www.jammuuniversity.in


Sd/-
DEAN ACADEMIC AFFAIRS

No. F. Acd/II/18/3094-3112

Dated: 15-05-2018.

Copy for information and necessary action to:

1. Special Secretary to the Vice Chancellor, University of Jammu for the kind information of the Worthy Vice-Chancellor please
2. Sr. P.A. to the Dean Academic Affairs/ Dean Research Studies
3. Sr. P.A. to the Registrar/Controller of Examinations
4. Dean, Faculty of Mathematical Sciences
5. HOD/Convener, Board of Studies in Computer Applications
6. All members of the Board of Studies
7. C.A to the Controller of Examinations
8. I/c Director, Computer Centre, University of Jammu
9. Asst. Registrar (Conf. /Exams.UG/ Inf./Pub.)
10. Incharge, University Website for necessary action please.


Assistant Registrar (Academic)

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14/5/18

NO. 12/2018
Dt. 2-4-18

UNIVERSITY OF JAMMU, JAMMU

Syllabus of B.A./B.Sc. Computer Applications (Semester System)

For the semester examinations to be held in the year 2017 onwards.

This course shall be offered in BA/BSc programme alongwith other courses and combinations available for the students of B.A./B.Sc programmes. Computer Application shall be one course along with other three courses which may be opted by the students as per the combinations offered by the University/College.

Semester-wise Course Distribution of Computer Application is given as:-

Semester – I

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE)
Course code	Course Title	Course code	Course name	
UCATC-101	Computer Fundamentals and IT tools (4 credits)			
UCAPC-150	Practicals based on DOS, WINDOWS, MS-OFFICE (2 credits)			

Semester – II

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE)
Course code	Course Title	Course code	Course name	
UCATC-201	Problem Solving using C language (4 credits)			
UCAPC-250	Practicals based on C-Language (2 credits)			

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Semester – III

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE)
Course code	Course Title	Course code	Course name	
UCATC-301	Data and file structure using C language (4 credits)	UCAPS-351	PC Assembly And Installation (4 credits)	
UCAPC-350	Practicals (Based on Data & File Structure Using C.) (2 credits)			

Semester – IV

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE)
Course code	Course Title	Course code	Course name	
UCATC-401	Database Management System & SQL (4 credits)	UCAPS-451	Information Security (4 credits)	
UCAPC-450	Practical (Oracle & PL/SQL) (2 credits)			

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Semester –V

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE) (Any One)	
Course code	Course Title	Course code	Course name	Course code	Course name
		UCAPS-551	Multimedia Computing (4 credits)	UCATE-501	Fundamentals of Operating System (4 credits)
				UCAPE-550	Practical (Unix/Linux) (2 credits)
				UCATE-502	Object Oriented Programming Using C++ (4 credits)
				UCAPE-560	Practical (C++) (2 credits)

Semester – VI

Core Courses		Skill Enhancement Course (SEC)		Elective Discipline Specific(DSE) (Any One)	
Course code	Course Title	Course code	Course name	Course code	Course name
		UCAPS-651	Website Development Tools (4 credits)	UCATE-601	Networking and Internet (4 credits)
				UCAPE-650	Practical (HTML, JavaScript) (2 credits)
				UCATE-602	Java Programming (4 credits)
				UCAPE-660	Practical (Java) (2 credits)

B.A./B.Sc. Computer Applications

(SEMESTER – V)

(Examination to be held in Dec 2018, 2019 and 2020)

SKILL ENHANCEMENT COURSE

Course No.: UCAPS-551

Duration of Examination: 2 ½ Hrs

TITLE: MULTIMEDIA COMPUTING

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

UNIT-I

Evolution of Multimedia and its objects, Scope of multimedia in business and work, production and planning of Multimedia applications. Multimedia and Hypermedia, World Wide Web, Multimedia hardware, Memory of Storage Devices, Communication Devices, Multimedia Software, Presentation and object generation tools, Video, sound.

10 Hrs

UNIT-II

Digital Audio Concepts, Sampling variables, Loss Less compression, of sound, Lossy compression, Types of Video Signals, Analog Video, Digital Video, Digitization of Sound, MIDI: Musical Instrument Digital Interface, Quantization and Transmission of Audio.

10 Hrs

UNIT-III

Multimedia monitor bitmaps, Vector drawing, Lossy graphic compression, Image standards, JPEG compression, Video representation, video compression, MPEG standards, MHEG standard, recent development in multimedia. Multimedia Application Planning, Costing, Proposal preparation, and Financing-Case study of a typical industry.

10 Hrs

UNIT-IV

Multimedia Network Communications and Applications: Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand (MOD), Multimedia over Wireless Networks.

10 Hrs

UNIT-V

Content-Based Retrieval in Digital Libraries, Relevance Feedback, Quantifying Results, Querying on Videos, Querying on Other Formats, Outlook for Content-Based Retrieval, Streaming Multimedia over the Internet, Scalable Video Coding, Multiple Description Coding.

10 Hrs



Suggested Readings:

1. Tay Vaughan, "Multimedia Making It work" Tata McGraw Hill.
2. Ze-Nian Li and M. S. Drew, "Fundamental of Multimedia", Pearson Education.
3. D.J. Gibbs & D.C. Tschritz: Multimedia programming Object Environment & Frame work, 2000.

Note: Skilled based courses shall be evaluated internally

Instructions for paper setter

The question paper will be divided into the following three sections. No question will be repeated in the question paper.

Section A

Total of 5 short answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 80 words. Each question shall be of 3 marks.

(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.



B.A./B.Sc. Computer Applications

(SEMESTER – V)

(Examination to be held in Dec 2018, 2019 and 2020)

DISCIPLINE SPECIFIC ELECTIVE

Course No.: UCATE-501

Duration of Examination: 2 ½ Hrs

TITLE: FUNDAMENTALS OF OPERATING SYSTEM

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

UNIT-1

Introduction to Operating System:- Definition, Evolution of Operating Systems, Features, Types of Operating System: Single user, Multiuser, Batch processing, Time Sharing, Real Time, Multiprogramming, Multitasking, Networking, Distributed, Architecture of Operating System, a brief Description of some Operating systems: Windows, UNIX, LINUX, OS/2, MAC, ANDROID.

10 Hrs

UNIT-2

Process Management:- Process, Process States, Processor Utilization, Response Time, Throughput.

Interprocess Communication:- Race Condition, Critical Regions and Mutual Exclusion. Deadlock: Overview, Detection, Avoidance and Prevention, CPU Scheduler, Scheduling Types & Algorithms: FCFS(First Come First Serve), SJF(Shortest Job First), Round Robin, SRT(Shortest Remaining Time).

10 Hrs

UNIT-3

Memory Management:- Memory Partitioning, Swapping, Paging, Segmentation, Virtual Memory: Concept, Demand Paging, Page Replacement Algorithms- FIFO (First in First Out), LRU(Least recently Used), OPT(Optimal Page Replacement), LFU(Least Frequently used).

Disk: Structure, Scheduling & Disk Space Management.

10 Hrs

UNIT-4

File Systems:- Files- File naming, File types, File attributes, Directories- Single level, hierarchical. File access methods; File Allocation Methods:- Continuous Allocation, Chained Allocation and indexed Allocation, Protection and Free Space Management.

Linux Introduction:- Basic Features, Advantages, Basic Architecture of UNIX/LINUX system, Kernel, Shell, Difference between UNIX and LINUX.

10 Hrs

UNIT-5

UNIX/LINUX:- UNIX/LINUX Commands for files and Directories:- cd, cp, mv, rm, mkdir, more, less, Creating and viewing files using cat, File view and comparison, Batch Commands- kill, ps, who, sleep. Printing commands- grep, fgrep, find, sort, cal, and banner. File related Commands- ws, sat, cut, grep, dd.

10 Hrs

Suggested Readings

1. Andrew. S. Tanenbaum : Modern operating systems, pearson prentice hall.
2. A. S. Tanenbaum , A. S. Woodhull : Operating systems-design and implementation, Prentice hall of India pvt. ltd.
3. Milenkovic M : Operating system-concepts and design, McGraw hillinternational editions.
4. Silberschartz, Galvin, Gagne : Operating system Principles , WSE wiley.
5. Sumitabha Das- UNIX Concepts and Application, Tata McGraw Hill
6. Richard L. Petersen, The Complete Reference Linux, Tata McGraw Hill

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(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Course No.: UCAPE-550

Duration of Examination: 3 Hrs

TITLE: PRACTICALS (BASED ON UNIX/LINUX)

No. of Credits = 2

Total Marks = 50

In this course the students shall be exposed to various practical problems based on the above topic. The Teacher-in-Charge shall design 30-40 problems based on these topics. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least two internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of their practicals in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

External Examination = 25 marks

Internal Examination = 25 marks

- Regular Tests = 2 tests (5 marks each)
- Viva voice = 5 marks
- Practical File = 5 marks
- Attendance = 5 marks



B.A./B.Sc. Computer Applications

(SEMESTER – V)

(Examination to be held in Dec 2018, 2019 and 2020)

DISCIPLINE SPECIFIC ELECTIVE

Course No.: UCATE-502

Duration of Examination: 2 ½ Hrs

TITLE: OBJECT ORIENTED PROGRAMMING USING C++

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

UNIT - I

Paradigms of Programming Languages, Procedural programming, Comparison of Object Oriented and Procedure Oriented Approaches.

Concept of Object Oriented Programming –Abstraction, Data hiding, Data encapsulation, Class and Object, Polymorphism, Inheritance. Benefits of OOPs, Applications of OOPs,

Basic program construction-Data types, reference variables, Input/output statements, comments, escape sequence, manipulators, type conversion, arithmetic, logical and relational operators; preprocessor directives, header files.

10 Hrs

UNIT - II

Conditional statements: if-else, if-else-if ladder, nested if, switch, Nested switch, break and continue; Loops: for, while, do-while, Nested & infinite loops;

Structured Data Type: Array-Declaration/initialization of one & two dimensional array, Inputting, Accessing, Manipulation of Array elements.

Functions: Defining a function, Invoking/calling a function, passing arguments to function, inline functions, default argument, constant argument, call by value, call by reference, return statement; functions with arrays, function overloading.

10 Hrs

UNIT – III

Implementation of OOP concepts in C++: Definition of a class, Members of a class-Data Members and Member Functions (methods), visibility modes; Member function definition: inside and outside class definition; Declaration of objects; accessing members from object(s), Objects as function arguments - pass by value and pass by reference; static members; Array of objects, Operator overloading.

10 Hrs

UNIT – IV

Constructors and types: Declaration/definition; default, copy and parameterized constructors; Memory management; overloaded constructors; Destructors.

String- Declaration/Initialization, string manipulations (counting vowels/ consonants/ digits/ special characters of a string); String Handling and Mathematical functions.

10 Hrs

UNIT – V

Pointers: Declaration/Initialization; Dynamic memory allocation/deallocation operators: new, delete; this pointer;

Inheritance: derived class and base class, types of inheritance: single level, multiple, multilevel, hierarchical, hybrid inheritance, derived class constructors, Privately derived, publicly derived and protectedly derived class, accessibility of members from objects, Exception handling.

10 Hrs

Suggested Readings:

1. Herbert Schildt, C++ The Complete Reference, McGraw Hill.
2. Robert Lafore, Object Oriented Programming In C++, Galgotia publ.
3. H.M. Deitel and P.J. Deitel, C++: How to Program, Prentice Hall.
4. Bjarne Stroustrup, The C++ Programming Language, (3rd edition), Addison Wesley.
5. Object Oriented Programming and C++, Balaguruswamy, TMH

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The question paper will be divided into the following three sections. No question will be repeated in the question paper.

Section A

Total of 5 short answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 80 words. Each question shall be of 3 marks.

(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

Course No.: UCAPE-560

Duration of Examination: 3 Hrs

TITLE: PRACTICALS (BASED ON C++ LANGUAGE)

No. of Credits = 2

Total Marks = 50

In this course the students shall be exposed to various practical problems based on the above topic.. The Teacher-in-Charge shall design 30-40 problems based on these topics. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least two internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of their practicals in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

External Examination = 25 marks

Internal Examination = 25 marks

- Regular Tests = 2 tests (5 marks each)
- Viva voice = 5 marks
- Practical File = 5 marks
- Attendance = 5 marks



B.A./B.Sc. Computer Applications

(SEMESTER – VI)

(Examination to be held in May 2019, 2020 and 2021)

SKILL ENHANCEMENT COURSE (SEC)

Course No.: UCAPS-651

Duration of Examination: 2 ½ Hrs

TITLE: WEBSITE DEVELOPMENT TOOLS

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

UNIT-I

A brief introduction to the Internet: URL (Uniform Resource locator), Internet service provider, www, HTTP, Web Portal, web browser, Web Server, domain name system (DNS).

Introduction to HTML, CSS and Javascript

10 Hrs

UNIT-II

Introduction to Expression Web – A website development tool: Understanding web expression Interface, Opening a site, opening a page, using page views, Using browser preview, changing site settings, Changing page editor options, Using expression development server.

10 Hrs

UNIT-III

Creating a new site with expression web: creating a new site from an expression web template, creating an empty site and importing files and folders, Using tables, adding media to a web page, Using Photoshop files in a web page,

10 Hrs

UNIT-IV

Using forms, Understanding validity, Using jquery in a web page.

Creating a website from a scratch: creating an HTML layout, Designing the site architecture & navigation.

10 Hrs

UNIT-V

Considering hosting requirements, finding and registering a domain name, Publishing Protocols, publishing a website, managing a website.

10 Hrs

Suggested Readings:

1. The Internet Book 4th Edition-Douglas E Comer, Prentice Hall.
2. Beginning web programming with HTML,CSS,Javascript- John Ducett
3. Step by Step –"Microsoft Expression Web 4" By Chris Leads
4. Learning jquery: Better Intereaction Design and web development with simple Javascript Techniques, By Karl swedberg

Note: Skilled based courses shall be evaluated internally

Instructions for paper setter

The question paper will be divided into the following three sections. No question will be repeated in the question paper.

Section A

Total of 5 short answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 80 words. Each question shall be of 3 marks.

(5 x 3 = 15 marks)

Section B

Total of 5 medium answer questions (one from each Unit) shall be set and the candidates are required to answer all questions. Answer to a question should not exceed 300 words. Each question shall be of 7 marks.

(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.

B.A./B.Sc. Computer Applications

(SEMESTER – VI)

(Examination to be held in MAY 2019, 2020 and 2021)

DISCIPLINE SPECIFIC ELECTIVE

Course No.: UCATE-601

Duration of Examination: 2 ½ Hrs

TITLE: NETWORKING AND INTERNET

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

Unit – I

Networking definition, Network hardware and software, Types of networks, Advantages of Networking, Topologies, Transmission Medium, Transmission Modes (Simplex, Half duplex and Full duplex), Components (Hub, Connector, Switch, Router, Gateway, Bridge)

Unit – II

Protocol, Client and Server, Internet Protocol, IP Addresses, Classes of IP Addresses, Intranet and Internet (Advantages and Disadvantages), OSI Reference Model, TCP/IP Reference Model, peer to peer network, network security

Unit – III

Web Browser, Web Portal, Web Server, Web Site/Web Page, World Wide Web, HTTP, Domain Name System, Uniform Resource Locator, Internet Service Provider, Web Security, Cookies, Firewalls, Web applications, Search Engine

Unit – IV

Introduction to HTML, Format of HTML Program, Formatting Tags, Image Tags, Linking of Documents, List Tag, Tables Tag, Frames, Forms, Introduction to Cascading Style sheet, Defining Style, Inline Styles, Internal and External Style sheet.
web

Unit-V

Introduction to JavaScript, Variables, Conditional and Loops Control Statement, Functions, Strings and Mathematical Functions, Window and Document Object and Basic Events.

Suggested Readings

1. Computer Networks- Andrew.S. Tannenbaum, Pearson
2. Data and Computer Communication- Williams Stallings, Pearson
3. Data Communication and Networking- Forouzan, McGraw Hill Professional Publication.
4. The Internet Book- Douglas E. Comer, Prentice Hall.

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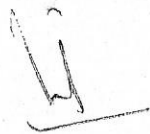
(5 x 7 = 35 marks)

Section C

It will contain five long answer questions (one from each Unit). The candidates will be required to answer any two questions. Answer to each question should not exceed 600 words. Each question shall be of 15 marks.

(2 X 15 = 30 marks)

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Course No.: UCAPE-650

Duration of Examination: 3 Hrs

TITLE: PRACTICALS (BASED ON HTML & JAVASCRIPT)

No. of Credits = 2

Total Marks = 50

In this course the students shall be exposed to various practical problems based on the above topic. The Teacher-in-Charge shall design 30-40 problems based on these topics. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least two internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of their practicals in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

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- Viva voice = 5 marks
- Practical File = 5 marks
- Attendance = 5 marks



B.A./B.Sc. Computer Applications

(SEMESTER – VI)

(Examination to be held in May 2019, 2020 and 2021)

DISCIPLINE SPECIFIC ELECTIVE

Course No.: UCATE-602

Duration of Examination: 2 ½ Hrs

TITLE: JAVA PROGRAMMING

No. of Credits = 4

Total Marks = 100

Semester Exam. = 80

Int. Assessment = 20

UNIT - I

Introduction to Java, Object Oriented concepts, Application of object oriented programming, Features of java programming, Java Virtual Machine, Primitive Data Type and Variables, Java Keywords, Java Operators, Expressions, Control Statements and Arrays.

10 Hrs

UNIT - II

Class and Objects, Constructors, Method Overloading, Static methods, Inheritance, Access Control, Method Overriding, Garbage Collection, Abstract Classes, Polymorphism Packages, Interfaces.

10 Hrs

UNIT - III

Exceptions Handling, Types of Exceptions, try-throw construct, catch, finally keyword, Writing Exception Subclasses, Multithreading, Synchronization in Java.

10 Hrs

UNIT - IV

I/O in Java, Byte Stream Classes, Character Stream Classes, Reading and Writing to Console, Reading and Writing Files, The Transient and Volatile Modifiers, The String and String Buffer Class, Configuring Applets, The Applet Class, Graphics and User Interfaces

10 Hrs

UNIT - V

Basics of AWT, Building User Interface with AWT, Layouts, Layout Manager, Event Handling, Action listener interface, panels, ,checkbox, Dialog and Frames, using menus, adapter classes, Graphics.

10 Hrs

Suggested Readings:

1. Herbert Schildt – “Java2 The Complete Reference”, Tata McGraw Hill.
2. E. Balagurusamy – “ Programming with JAVA”, Tata McGraw Hill
3. Steven Holzner – “Java2 Black Book”, Dreamtech Press.
4. Dietel & Dietel – “Java How to Program”, Pearson Education.
5. Grant Palmer – “Java Programmer’s Reference”, Wrox.

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(5 x 7 = 35 marks)

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(2 X 15 = 30 marks)

Note:-The paper setter shall ensure that the questions are uniformly distributed over entire syllabus.



Course No.: UCAPE-660

Duration of Examination: 3 Hrs

TITLE: PRACTICALS (BASED ON JAVA LANGUAGE)

No. of Credits = 2

Total Marks = 50

In this course the students shall be exposed to various practical problems based on the above topic. The Teacher-in-Charge shall design 30-40 problems based on these topics. The students shall be required to systematically work out the solution of those problems and implement using relevant tool in the computer laboratory. The 50% of the total marks in this paper shall be reserved for internal assessment. The Teacher-in-Charge shall conduct at least two internal evaluation tests for awarding the students for internal assessment. The students shall also be required to maintain proper record of their practicals in a Practical File which shall be regularly checked by the concerned teacher-in-charge. The internal assessment shall be based on regular tests, practical file and attendance in the laboratory. For the rest of 50% of the total marks there shall be an external examination which shall be conducted jointly by an internal examiner and an external examiner to be appointed by the University. The distribution of marks to various components is given below as:-

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- Viva voice = 5 marks
- Practical File = 5 marks
- Attendance = 5 marks

